

PHYSIOLOGY & MEMBRANE BIOLOGY

SCHOOL OF MEDICINE
UNIVERSITY OF CALIFORNIA AT DAVIS



DISTINGUISHED SPEAKER SERIES

Colin G. Nichols, Ph.D.

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Department of Cell Biology & Physiology

School of Medicine

Washington University in St. Louis

**“K_{ATP} channels: The exciting molecular link
between cell metabolism, diabetes and cardiac
arrhythmias”**

In responding to cytoplasmic nucleotide levels, ATP-sensitive potassium (K_{ATP}) channel activity provides a unique link between cellular energetics and electrical excitability. Crystallographic and electrophysiological studies have led to detailed structural and kinetic models that define the molecular basis of channel activity. In parallel, the uncovering of disease-causing mutations of K_{ATP} has led to an explanation of the molecular basis of disease and, in turn, to a better understanding of the structural basis of channel function. In parallel, these basic studies have fuelled the genetic manipulation of channels in recombinant organisms, in turn explaining ion channel diseases and informing clinical therapies. Animal models of increased or decreased K_{ATP} channel activity in the pancreas have defined the basis of congenital hyperinsulinism and neonatal diabetes, leading to dramatic improvements in therapeutic options, whereas cardiac-directed models have illustrated the role of this channel in consequences of metabolic alterations on cardiac rhythm. In this seminar, I will discuss these developments, and consider the biology of the K_{ATP} channel from the molecular level to human diseases.

Friday, December 5, 2008

10:00 am

GBSF Auditorium, Room 1005

Refreshments Will Be Served

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